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ABSTRACT

The use of telecommunications to expedite business communications in the "office of the future" is addressed in this paper. After briefly describing the development of the telephone industry and its response to consumer needs, the paper discusses the importance of information exchange through word processing, electronic mail, teleconferencing, facsimile devices, and distributed data processing. It also discusses the benefits of a paperless office of the future such as improved office productivity and more effective decision making based on current, complete, and relevant information. The obstacles to using paperless documentation are mentioned, including the question of the legality of electronically stored documents, the current lack of standardization among hardware systems, and the need for retraining all users of the new equipment. Additional potential problems not directly connected to the field of business communications are also discussed. (AEA)

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"BUSINESS COMMUNICATIONS IN THE 1980s"

Prepared for the 1980 Annual Conference
of the International Institute of Communications
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Canada

September 10, 1980.

by

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DISCUSSION GROUP 3
SESSION C

Notes for remarks by

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"Business Communications in the 1980s"

-, a discussion group session of the
International Institute of Communications
Annual Conference

Ottawa

September 10, 1980

I hope you will consider it appropriate that one of the participants in this discussion on business communications is the chief executive officer of a telecommunications carrier.

I consider it appropriate for two reasons.

For much of my working life, I was concerned with what has been the primary instrument of business communications for the past century - - the telephone.

Now, as Chairman of a diversified telecommunications entity which embraces both a telecommunications network of digital switches, computers, optic fibres, wave guides, microprocessors, CRTs and satellites; and an equipment manufacturing arm with its own research and development component, I am equally concerned with business communications.

As far as business communication is concerned, the telecommunication network is evolving from what was essentially a wire-and-switch operation into a highly flexible business tool embodying the whole spectrum of the new technologies.

The second reason, I believe it is appropriate that a representative of a telecommunications network should take part in this discussion is that we in the telephone business have already had to cope with one aspect of the coming revolution in business communications.

I would like to draw this parallel. In the early days of the telephone industry, we attempted to meet the flow of information -- in that case the verbal requests of our customers for connections to other parties -- by simply multiplying the number of switchboards and the number of operators at those switchboards.

In the traditional office - today's office - we have been attempting to deal with the flow of information -- in this case a paper flow -- by adding more paper workers and more space to store and process the paper.

The telephone industry had to find a better way - in our case, it was first the mechanization and then the automation of equipment. Before business drowns in a sea of paper, it too must find a better way.

That better way has been heralded as the 'office of the future'. It is under that general heading that I would like to touch on some of the present trends, some of the present and anticipated problems and some of its implications.

As you are aware, there are so many concepts associated with the term 'office of the future' that we will be able to touch on only some of the more important developments that have already taken place or that are clearly on the horizon.

Any discussion of the office of the future begins and ends with one word - Information. The exchange of information in terms of various kinds of data processing, record keeping, market research, buying and selling orders and so on is the foundation of our economic system.

If the machines or systems we use in connection with this exchange of information are to be valuable -- to earn their keep -- they must separately or in total do the following:

- they must speed the flow of information to keep it as current as possible

- they must get the information to the people (or machines) requiring it

- they must make all relevant information, even non-current or normally inaccessible information, available to the user

- they must protect the confidentiality of that information while it is en route from Point A to Points B, C or D

- and, finally, these new machines or services must do all of these things more efficiently than the present paper-oriented devices and service now in operation.

What are some of the new systems and services we have in mind when we talk about the 'office of the future'?

I think a short list would have to include word processing, electronic mail, teleconferencing, facsimile devices and distributed data processing. I know that this audience is familiar enough with each of these concepts that I need not describe them in detail.

However, I will point out that they have come into being as a result of the development which took place in the '70s -- the marriage of the digital computer and the telecommunications network. And they embody micro-electronics, digital techniques, large capacity memory devices and stored program computer control. Those are services which are here now.

To step just a short distance into the future, we can see the office equipped with computerized document distribution systems - a paperless process and I would like to come back to the subject of paperless documentation in a moment. We will be using central dictation pools. CRTs or their improved flat-wall successors will be commonplace throughout the office, as will intelligent terminal workstations. These will combine computer capability with a communications link so that both external sources of information or internal storage of data or other information will be provided in textual or voice form. These will be interactive and flexible so that each user can choose his or her own preferred features.

All of these services - both the present realities and the future promises - have two objectives in common: to improve the productivity of the information worker and to improve the decision-making process.

You will, I am sure, have seen figures demonstrating that improvement in office productivity has lagged dramatically behind other sectors of the economy, rising at something like one-twentieth of the rate of improvement in industrial productivity.

The flood of paper which is characteristic of the traditional office has been responsible for this slow progress. It has also required that generations of office workers have been doing work that is essentially boring, repetitious and, in many instances, far below the capabilities of those workers.

Certainly the office of the future will eliminate or reduce many of these chores and improve office productivity. But it will do much more than that.

It will, or should, permit the manager to make more effective decisions because he or she will have available as a decision-making tool the information required - current, complete and relevant. That it will also require the manager to make decisions in a much shorter time-frame is one of the implications I will be mentioning in a few moments.

You will have noticed that I have moved into this discussion of the office of the future with some assurance - as though it were an accomplished fact - or one easy of attainment.

To balance that approach, I would like now to look at some of the obstacles which must be overcome before the office of the future takes shape on the scale and in the form that we see described so often.

In connection with the electronic storage and distribution of information, I used the phrase 'paperless documentation' which is itself a contradiction in terms.

I am not sure that the implications of recording and storing business documents electronically have been appreciated by some of those who advocate the early and widespread appearance of the office of the future concept. I am referring to the legal implications.

Will a string of 'bits' on a magnetic tape or on a disc or even in an integrated memory chip hold up as a legal document in a court of law?

Before they can do so, there will have to be assurance that such records will retain all their characteristics and content over time and under the applicable storage conditions. There will have to be an assurance that such records cannot have been altered in any way, either by accident or for criminal purposes. And the signature will have to be demonstrably authentic.

Even assuming that these safeguards for electronically recorded documents are present, a whole new body of law dealing with this subject will have to be created through the evolutionary process of legislation and court decisions.

Given the nature of the legislative and legal processes, it is quite likely that a meeting such as the one we are at today, will be discussing this problem in 1990 and possibly even in the year 2,000. For some time to come, important business documentation will have to be recorded on paper as well as electronically.

Many of the safeguards required before the electronic documentation of business records and transactions can achieve the same status as paper are required now. Certainly the instances of computer theft and manipulation of data have been widespread enough to catch public attention and raise official questions.

However, there is reason to believe that efficient safeguards can now be built into new systems to control and audit access to electronic records and to detect and trace alterations to data.

One of the earliest and greatest obstacles to the coming of the information age and the office of the future has been incompatibility - not only network incompatibility but also that of the communications machines: word processors, computers, terminals and facsimile devices. The confusion increased as each manufacturer or system designer sought to incorporate some unique feature.

Fortunately, we can look to an early end to this situation. In the 1980s we will see standards for interconnection in terminals, computers, facsimile devices and work processors implemented. The intelligent networks will allow incompatible devices from different manufacturers to communicate.

Not only will the integration of networks within the four categories of voice, data, image and message be facilitated by these developments, we should also see a crossing of the boundaries that presently separate the four categories.

Some of the developments, in planning or proposal stages at present, which will produce this effect include: the interfacing of voice and data networks.

- the integration of voice, data and video networks into single digital bit streams

- switches which permit switching both voice and data or message traffic

- the use of intelligent copiers as remote facsimile devices

- small business computers and distributed processing systems with word processing and communications options on the computers.

While these developments are promising, the present reality in business communications is that incompatibility remains a problem. A well balanced system of distributing computer intelligence can pay dividends greater than the sum of its parts, but a poorly configured system can cost far more than it will ever be worth.

There is another obstacle which has received considerable attention in the popular press reports on the office of the future and that is the requirement for keyboard orientation on the part of all users of the new equipment.

The argument goes that senior executives are not likely to be found hunched over their keyboard terminals requesting data by the hunt-and-peck method. While there is some validity in the argument, I believe that most managers will accept this as a challenge and weigh the benefits of having direct and customized access to information against the awkwardness of the method. Then too, today's young manager is far more likely to have keyboard orientation than was the case for my generation.

Progress is also being made on the development of user-friendly keyboards and terminals - engineered in human terms.

The ultimate answer, however, is the speech-actuated terminal which will permit the human to carry on a conversation with the computer in plain language.

When digital coding and processing of speech is perfected, it will be used for - among other things - voice verification which will be essential for much services as electronic funds transfer systems and access to personal record. Speech recognition will allow the computer to understand what the human is saying and speech synthesis will allow the computer to answer intelligibly.

It will be some time before we arrive at this level of sophistication and managers would be well advised to practice their hunt-and-peck typing.

There is another obstacle along this road - the human factor. Two opposite human attitudes - an eagerness for change and a resistance to change - can each prove to be a barrier.

It is important that those who welcome change for its own sake do not become dazzled too much by the multicolored blinking lights on the new equipment. A fascination with gadgetry could well result in the installation of equipment or services which are superfluous or unsuitable, thereby jeopardizing the future installation of the proper systems and services.

It is even more important that those who resist change - and you will find them in any organization - should not base their objections on distorted or incomplete information. Fear is often at the root of this attitude and, in many cases, this fear can be allayed by the presentation of complete accurate information about the new processes and machines.

I would like to turn now from the obstacles to the attainment of what we are calling the office of the future concept to some of its implications.

What we are talking about is, in a very real sense, a revolutionary development. Its implications for society as a whole are so broad and, presently, so ill-defined, that we must narrow the focus of our discussion to some of its implications for the business organization.

Within the business entity itself, we can look for reorganization and restructuring as a result of the new technologies. Traditional hierarchies and departmental boundaries will be affected, as will the inter-office relationships of our white collar workers. Work assignments, job descriptions, remuneration will have to become more fluid and more elastic as the traditional barriers and compartments breakdown in the face of rapidly changing responsibilities.

For example, with the coming integration in voice, text and data services, the classic division of responsibility among the communications manager, the data processing manager and the office manager will produce conflict and confusion. It will make good sense to ensure that there is unified control over all these aspect of information management but, to do so, career paths will have to be changed to reflect such an arrangement.

While these are essentially human rather than technological problems, it will be as important to solve them as to ensure that the right machines and systems are in place.

I mentioned earlier that the manager in the office of the future would have the information tools required to make more informed and therefore - theoretically at least - better decisions. There will also be pressure - dictated by the timeliness of the information itself - to make faster decisions.

In the area of marketing, for example, we can look for faster and better market research which could lead to more frequent product changes to reflect volatile market conditions. This in turn would lead to shorter product life, increased design requirements and even more extensive retaining.

Training and retraining will become very important as a result of the office of the future, as old job requirements disappear and new ones take their place to be succeeded by still more changes.

I have not touched on the implications inherent in the 'work-at-home' potential of the new technologies and their products. This is one of the most cherished projections of technologists and futurist and it is certainly possible. It

is already in practice on a small scale in various industries but I do not believe we will see it come into being on anything like the scale that has been suggested where every home is an electronic cottage industry. Organizations are essentially people driven. If they aren't, they don't survive and I believe there will always be a need for the basic one-to-one relationship which produces so many intangible but valuable results.

Similarly, I do not believe that teleconferencing, valuable though it is proving to be in terms of efficiency and travel savings, will eliminate the need for conferences such as this one. As someone has said, you don't go to conferences for what is said in the meeting room but for what you can learn in the corridors.

I have tried to keep my focus within the boundaries of the corporation or organization in touching on the implications of the office of the future concept. For a moment, I would like to move farther afield to consider just one possible effect of this concept.

Let us assume that the office of the future becomes a widely accepted reality and that it is truly and literally a paperless office.

I come from the province of British Columbia. The primary resource of my province is timber - one of its primary industries the manufacturing of pulp and paper. Does the paperless office spell redundancy for the loggers of British Columbia - given that accompanying the office of the future is the home entertainment centre and facsimile which will, we are told, eliminate the newspaper?

If teleconferencing replaces a very large proportion of business travel, what does this do to the airlines, the hotel industry and those expense-account restaurants?

I don't have answers to those questions but I believe that it is important that when we consider the bright new world our technologies are offering, we are also aware that there is a darker side to that world.

When I set priorities in my own business, I must consider not only the very exciting and potentially lucrative prospects offered by these new technologies but also the knowledge that these business opportunities will seem completely irrelevant to the customer who is waiting for improved basic service in some remote part of our operating territory.

The fact that the telecommunications carriers such as B.C. Tel have the obligation to provide service and must commit sufficient resources to meet that obligation is often overlooked by those who want the carriers to provide all manner of new and sophisticated services for small or fragmented markets.

Again, however, I don't believe this problem will be solved today or tomorrow.

I would like to conclude by remarks with two quotations:

Peter Drucker has said:

> "Knowledge, during the past few decades, has become the central capital, the cost centre, and the crucial resource of the economy. The productivity of knowledge has already become the key to productivity, competitive strength and economic achievement. Knowledge has already become the primary industry, the industry that supplies the economy with the central and essential resources of production".

I am sure that anyone associated with business communications would agree heartily with that assessment.

And to conclude on a much less lofty plane (it might even be termed self-serving for someone in my position) let me quote the president of Qwip Systems, John E. Cochran who said:

> "Vendors who propose to connect point-of-need end users to the data available through office of the future systems must first consider the availability of transmission. The world's phone systems right now reach out all the way to the executive who needs information and needs to transmit it. The vendor who exploits this ubiquitous network by providing simple, unobtrusive terminals for imaginal information transfer will be ahead of the game".

I hope I have been able to provide some starting points for the discussions and I look forward to taking part in and learning from them.

Thank you.